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The author enters into a minute description of the mechanical apparatus employed for obtaining the necessary purchases for the various operations which were required, and gives a circumstantial history of his proceedings. Frequent interruptions were experienced from the state of the weather, and the almost incessant agitation of the water, which was often so powerful as to render the diving-bell unmanageable, and to expose the divers to serious danger. The diving-bell consisted of a one-ton ship's water-tank, with eight inches of iron riveted to the bottom in order to give it more depth, and having attached to it 18 pigs of ballast, the weight of which (17 cwt.) was found to be sufficient to sink it.

As soon as the necessary arrangements had been completed, the author states that he made a minute survey of the bottom, by means of the diving-bell, and ascertained the exact position and shape of all the large rocks which covered the spot where the treasures and stores of the *Thetis* had been scattered. The shape of the area where the precious metals in particular had been deposited, was an ellipse, of which the two principal axes measured 48 and 31 feet ; and large boulders of granite had been subsequently rolled over these treasures, and required being removed before the latter could be recovered. The superincumbent pressure of the sea, aided by the huge materials of the wreck of the frigate, which, under the influence of the swell, acting like a paviour's hammer, with enormous momentum, had jammed together the rocks, and produced a strong cohesion between the fragments of wood, and the gold, silver and iron.

The first object was to clear away every portion of the wreck ; and after this had been accomplished, to loosen and remove all the large rocks in succession, beginning with the smallest, and ending with the largest and most unwieldy. Some of these, which they succeeded in rolling from their situations into deeper water, weighed about thirty or forty tons ; and the largest, which required the greatest efforts to move from its place, was computed to weigh sixty-three tons. This last effort served to show, that no part, either of the wreck or the stores, which was of any value, remained behind ; and after fifteen-sixteenths of the property had been recovered, the enterprise, which had so perfectly succeeded, terminated on the 24th of July, and the *Algerine* returned to Rio de Janeiro on the 1st of August.

The author subjoins an account of the currents off Cape Frio, and a description of the climate, which seems to have been favourable, for his party suffered but little from sickness, and the expedition was unattended with the loss of a single life. On one occasion the party were visited by a whale, which approached very near the diving-bell, but fortunately changed its course, without doing any mischief.

A paper was then read, entitled, "An Account of a Concave Achromatic Lens, adapted to the Wired Micrometer, which has been named *Macro-micro*, from its power to increase the primary image of a Telescope without increasing the diameter of the wires in the Micrometer." By George Dollond, Esq., F.R.S.

The application of a concave achromatic lens to the wired micrometer of a telescope, arose out of the series of trials that were made for the purpose of correcting the aberrations of the eye-glasses applied to the telescope constructed by the author for the Royal Society, with a fluid-correcting lens, on the plan suggested by Professor Barlow. The concave lens, being interposed between the object-glass and the eye-glass, and being at the same time achromatic, combines the advantages of doubling the magnifying power, without a corresponding diminution of light, and without altering the apparent distances of the threads of the micrometer. The results of the trials made with telescopes to which this addition was made, are given in a letter to the author from the Rev. W. R. Dawes, of Ornskirk ; from which it appears that Mr. Dollond's method was attended with complete success. Mr. Dawes states, that, in order to put its illuminating power to a severe test, he had examined with this instrument the satellites of Saturn and the minute companion of  $\kappa$  Geminorum, but could discover no decided difference in the apparent brightness of the former, allowance being made for the difference in the power employed ; and the latter star was seen quite as distinctly with a much smaller power.

Extracts are subjoined from a letter of Professor Barlow's to the author, containing formulæ for the construction of the lens.

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March 6th, 1833.

MARK ISAMBARD BRUNEL, Esq., Vice-President, in the Chair.

The reading of a paper, entitled, "On the Structure and Functions of tubular and cellular Polypi, and of Ascidiae." By Joseph Jackson Lister, Esq., F.R.S.—was commenced.

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March 13th, 1833.

JOHN WILLIAM LUBBOCK, Esq. M.A., V.P. and Treasurer, in the Chair.

The reading of Mr. Lister's paper was resumed and concluded.

This paper contains the account of a great number of observations made by the author during the last summer, while he was at the southern coast of England, on several species of *Sertulariæ*, *Plumulariæ*, *Tubulariæ*, *Campanulariæ*, *Flustræ*, and other polypiferous zoophytes, and also on various *Ascidie*. Each specimen was placed for examination in a glass trough with parallel sides, before the large achromatic microscope of the author, directed horizontally ; and care was taken to change the sea-water frequently, which was done by means of two syphons, the one supplying fresh water, while the other carried off the old ; a plan which succeeded in keeping the animals in perfect health and vigour. The drawings which were taken of the